The South Carolina
Forest Steward
Spring 2006

In This Issue…

With the wildfire season upon us, our lead article is an excerpt from the South Carolina Forestry Commission website. This website covers a broad range of information, but is particularly useful to landowners with concerns about fire. Specific information on warnings, numbers to call, wildfire prevention, fire weather and laws are a mouse-click away when visiting this site. While wildfire is particularly destructive, fire can also be a useful management tool. Additional articles cover the benefits of using growing season burns and how to conduct controlled burning in southern pine forests. Our other major subject area includes an article on invasive species by Mary Morrison of the USDA Forest Service, and a source where landowners can go to obtain seed for establishing native plants.

Larry Nelson and Bob Franklin, Coeditors

Fire and Burning Information

From the South Carolina Forestry Commission website located at: http://www.state.sc.us/forest/fire.htm

The South Carolina Forestry Commission is responsible for protecting 13.6 million acres from wildland fire; this includes 12.2 million acres of commercial forestland.

The Forestry Commission has a statewide wildland fire prevention, detection and control network in place. Personnel are assigned throughout the state in a series of unit, regional, and headquarters offices. The largest single group of employees – wildland firefighters – report directly from their residences in responding to wildland fires. Forestry Commission dispatch is by closest available resource, regardless of political or administrative boundaries.

There are approximately 900 county, municipal, and volunteer fire departments in South Carolina. Most of these fire departments respond to wildland fires and control a large number of the wildland fires before they become destructive. The fire departments and the Forestry Commission work together to control wildland fires. Most of the fire departments are not equipped to control wildland fires that have burned beyond areas that can be reached from roads.

Forestry Commission firefighters respond to more than 4,000 wildland fires burning about 24,000 acres per year; 98% of the wildland fires are caused by human activities. Fire departments respond to more than 20,000 grass, brush, woods, or rubbish fires per year.

FIRE

Special Warnings Now in Effect – In the case of an emergency fire situation, information will be posted here. (Opens in a new window)

Outdoor Burning: – Numbers to Call, Regulations and Assistance Concerning Residential Yard Debris, Agricultural, Wildlife, and Construction Burns,**How to Report a Wildfire**, and **How to Report Woods Arson**

Information about Wildfire – Facts about wildfire in South Carolina, Statistics, History of SC Firefighting, and Significant Wildfires in SC.

Fire Photos – Some photos of fire activity.

PREVENTION

Wildland-Urban Interface Fire Prevention – How the Forestry Commission can help you protect your home and community.

SC Wildfire Prevention Team – Follow Team events as they are activated.

Fire Prevention Poster Archive – SCFC's Fire Prevention poster collection.

INFORMATION

Red Flag Fire Alert/Burning Ban – What is this difference between a Red Flag Fire Alert and a Burning Ban?

SC Fire Weather – Today's Fire Weather Forecast.

SC Drought Index (Opens a new window.)

LAWS

Laws and Regulations – Forest Law Handbook.

Smoke Management Guidelines (pdf)

Laws That Protect Our Forests & People – Forest protection laws safeguard the state's valuable natural resource.

Clean Air Act

Growing Season Burns a Natural Ecological Process in South Carolina

by Johnny Stowe, Heritage Preserve Managerr, Pee Dee Region

If you see or smell smoke near one of the DNR's Heritage Preserves this month, it may be coming from a prescribed fire conducted by the department's land managers. Prescribed burns (also called controlled burns) are generally conducted in the dormant season, mostly in late winter and very early spring. But according to Johnny Stowe, Heritage Preserve Manager for the Pee Dee Region and the DNR's representative on the South Carolina Prescribed Fire Council, periodic burns in the growing season can improve habitat in ways dormant season burns cannot. Growing season burns, which are conducted after leaf-out in the spring, are much more effective in controlling undesirable hardwoods, and are key in restoring and maintaining the herbaceous vegetation so crucial to brood-rearing for species like bobwhite quail and wild turkey. The herbaceous native vegetation stimulated by these burns, especially bunch-grasses and legumes, provides good cover for turkey poults and quail chicks, as well as laying hens of both species, while also promoting the insects that make up most of the young bird's diet(s?).

The Indians, our state's first land managers, burned lands statewide for millennia, but lightning was also a source of landscape-level fires. The SE US has the highest incidence of lightning strikes in North America, and most lightning strikes coincide with late spring and early- to mid-summer thunderstorms. Some of these strikes start fires, and of these fires, some of them are not extinguished by rainfall. Back before the landscape was intensively fragmented and before active fire suppression was necessary to protect property, a relatively-few, lightning-ignited fires could burn for weeks, or even months, burning thousands of acres in a mosaic pattern dictated by wind, humidity and fuel factors. This mosaic, or patchwork pattern of micro-habitats, is ideal for many species of wildlife.

Land managers are often leery of May-June burns because it has not been the traditional time of year to burn. But that tradition may have had more to do with the convenience and ease of burning than anything else. In late winter, vegetation tends to be dead and dry, and hence to burn well, and certainly the cool weather makes it more pleasant to conduct such fieldwork. It is also a time of year when farmers and other land managers are not as tied up with planting, harvesting and other chores.

An understandable concern about destroying bird nests causes people to avoid growing-season burns, but if you look at it from a population or ecosystem level, rather than focusing on individual animals or nests, the clear benefit of these burns outweighs any loss of nests. And surprisingly, sometimes fires do not destroy the nests. An article in the April issue of *Turkey Call*, the magazine of the National Wild Turkey Federation, notes that research in Mississippi on the effects of spring burns revealed that two hens continued incubation even after the area burned. In both cases, the eggs in the nests appeared to be unharmed. Plus, turkey and quail will often re-nest when they lose a nest. These and other South Carolina species are adapted to handle such losses – whether from fire or predators.

Another factor to consider is that late winter burning may expose some birds associated with grass-shrub vegetation to unnecessary predation by hawks and owls, since many of these raptors are migrating northward through the state at that time of year. Research on Tall Timbers Research Station indicates that a combination of periodic May-June burns interspersed with late-winter burns may be best for increasing overall diversity and abundance of insects.

Another benefit of conducting some burns in spring and summer is that it provides more burning opportunities, which are frequently limited because of staff availability, unpredictable weather, and other factors. We will always need to burn in the winter, but adding another season can increase the total number of acres burned.

University of Georgia researchers comparing the effects of year-old growing season burns with year-old dormant season burns on six understory-nesting songbird species found that the season of burning had no effect on nesting success of four of the species. But for the other two species, namely, yellow-breasted chats and northern cardinals, nesting success was better on areas burned during the growing season. In the long term, spring-summer burns would likely result in higher nesting success for many species of grassland birds.

The main benefit from May-June burns is probably the excellent hardwood control that results. Once hardwoods leaf out, they are much more likely to be injured or killed, both stems and roots, by fire. Winter burns tend to only top-kill hardwoods, and often don't even do that, but rather merely prune the lower limbs. Top-killed trees resprout vigorously each year, and may do so for decades. Clemson University researchers found over a 43-year period at the Santee Experimental Forest in Berkley County that dormant season burns yield dramatically different results than growing season burns. Their work revealed that summer burns greatly reduced and even eliminated hardwood stems, while winter burns tended to only top-kill hardwoods, and even worse, favored sweetgum, a fast-growing and generally undesirable species that sprouts prolifically after fire. Moreover, annual winter burns provide sprouts from top-killed hardwoods a full growing season to recover from fire, and the many surviving root systems produce larger numbers of sprouts after each fire.

While properly-conducted winter burns may produce desirable grassland habitat if conducted over many years, the danger is that if a year or two is missed, as it often is because of weather or other factors, then the numerous, established hardwood root systems will then quickly produce vigorous sprouts that shade out the herbaceous fuel, turning the grassland into a hardwood thicket. And then it is even harder to get it to burn. Conversely, if the hardwoods are killed roots-and-all by May-June burns, then missing a year or two is not nearly as crucial, since any hardwoods have to start from seed, which may not even be available on the site. This can be a very important factor, since hurricanes with resulting windfallen trees, droughts combined with high winds, heavy rainfall, personnel availability, or other factors often cause landowners to miss a year or two of burning. A primary management factor in maintaining ecosystem integrity is resilience, and reducing the number of hardwood stems in southern pinelands by growing season burns is one of the surest, and most efficient and effective ways to provide that resilience.

For landowners interested in visual aesthetics and unique ecosystems like wiregrass, growing season burns are the way to go. The saying *winter burn = bracken fern* has a good basis in reality, and not many folks want bracken fern "deserts," since they have limited wildlife value, and are not that nice to look at. Wiregrass blooms and produces viable seed best after growing season burns, and many wildflowers thrive after such burns.

Crucial factors for many landowners interested in developing good quail habitat include cost, time required to achieve results, and number of coveys found in hunting season. Growing season burns provide a quick way to drastically reduce the number of hardwood stems (complete kill of roots and stem, not just top-kill), and are quite inexpensive when compared to other tools such as herbicides, mechanical treatments, or decades of winter burning. At Tall Timbers, a two-year survey based on half-day hunts showed that more coveys of quail were found on summer burned plots than on winter burned plots.

Growing season burns require more expertise than dormant season burns, since in some fuels it can be difficult to get fire to carry after spring green-up, and the possibility of killing desirable trees may be greater. Prescribed fire managers unfamiliar with burning outside winter months should consult a Registered Forester, Consulting Forester, or Certified Wildlife Biologist who does have such experience.

How to Conduct Controlled Burns in Southern Pine Forests

By Paul Smeltzer, CF, from June 2004 issue, The Forestry Source

Fire is and always will be an important part of forest ecology. In Southern pine forests, such as those in Louisiana, there are five principal purposes or goals for controlled burning: fuel reduction, hardwood control, site preparation, wildlife management, and disease control. Besides purpose, the first thing that sets these five uses of burning apart is timing, so let us take a look at each of these objectives with respect to timing.

Hardwood Control

Spring is the most appropriate time of year to control a developing understory of hardwood saplings with controlled burning. These developing hardwoods, if left unchecked, can negatively effect pine growth by stealing available moisture and soil nutrients, restricting the development of natural regeneration, and restricting visibility and mobility for humans and animals.

A spring understory burn is very effective at disrupting hardwood sapling growth because at this stage the

saplings are just entering their growth cycle. The application of heat via the controlled burn cripples the growth process and is very effective in controlling hardwoods that are less than 3 inches in diameter at ground level. Typically a spring fire will be less intense and potentially less destructive than a summer fire; as a result, larger hardwood stems may not be affected. Running a spring fire through a pine stand every three to four years can be very effective in controlling the development of a hardwood understory.

Site Preparation

The aim of site preparation is to eliminate as much competition as possible for as long as possible so that pine seedlings will have the optimum potential for growth. Site preparation burns usually are done in late summer or fall when the fuel is dry, fire will reduce logging debris, and the burn is hot enough to kill developing hardwoods. Site preparation burns typically are done after a herbicide application. The herbicides "brown off" the live material, leading to a much more effective burn. Note, however, that you must use caution so that summer fires don't get too hot. If the fire is hot enough to vaporize all the material on the site to white ash, there is a good chance that the topsoil will be sterilized to a certain depth. This sterilized soil, which also is severely dried out, can be a poor environment in which to plant pine seedlings.

Fuel Reduction

Not all fires are human induced, and even if we could somehow stop all such fires, we can't stop nature. We can, however, lessen the devastation of natural forest fires by reducing the fuel level in a stand through controlled burning. We all know that pine needles are particularly flammable; in developing plantations, the needle drop can be tremendous and the buildup significant, especially in younger plantations. This buildup can even extend into the crowns of the trees as the needles "drape" over branches and live needles. If this fuel is not controlled, the first fire after 15 years of buildup can be quite dangerous.

Fuel reduction burns should not be conducted in stands with trees less than 4 inches in diameter at breast height or less than 15 feet in height and should be done in the winter. In severe buildups, consider burning during the winter at night so that you have a "cool" fire that moves through steadily, with flames about 3 feet in height.

Disease Control

Controlled burning is necessary for regeneration and to control pine diseases such as brown spot needle blight and annosum root rot. To control brown spot, burn in the winter and get a fast-moving fire to scorch needles that are infected while protecting the terminal bud. Fire also can help in controlling annosum root rot in slash and loblolly plantations. Annosum root rot is not a problem everywhere, but if it is a concern in your region, run a winter fire prior to cutting. The idea is to incinerate the litter that harbors the fungus.

Wildlife Management

The uses of fire in wildlife management will vary depending on which species or habitat you wish to favor. Generally, fires that control understory growth will promote grasses, forbs, herbs, and wildflowers, which are beneficial for wildlife. Because burns conducted for forest management may affect your wildlife management goals, when you burn on larger tracts consider staggering burns or creating unburned islands that wildlife can use while the burned areas recover. You also should consider how a burn might affect the reproduction of the species you are trying to manage. For example, bird species that ground nest may not fare well with a spring burn.

Finally, I leave with you my own how-to program for burning. It is simple and, I have found, very successful.

- Step 1—Find a qualified, insured, trained professional to do the burn.
- Step 2—Explain clearly what you want to have done and why.
- Step 3—Get a contract and go over the burn plan with the purveyor.
- Step 4—Check the results and pay the man.

Works for me every time.

This article was adapted from "Forestry 101: controlled Burning Varies by Season and Purpose," by Paul Smeltzer. It first appeared in the first quarter 2004 issue of Forests & People, a publication of the Louisiana Forestry Association. Smeltzer is a forestry consultant with Timber Resource Group, Inc., in Athens, Louisiana. ⁂

Silent Invaders

By Mary Morrison

Did you know that what you plant in your yard today could be in your National Forest tomorrow? It is estimated that about 10 percent of introduced plants will escape from yards and lawns and that about 10 percent of those escaped plants will become invasive. Non-native, exotic plants are quietly displacing native plants found in parks, forests, and other wildlands. This silent

invasion of America's wildlands has accelerated in the last few years due to increased international trade and importation of exotic plants.

Why should you be concerned? These exotic pest plants are so invasive that they create monocultures that cover extensive areas, which in turn reduce diversity and wildlife habitat. This monoculture reduces the variety of plants available as food sources for wildlife. If the invasive plant fails to produce seed due to things such as drought, late frost, etc, then a food source is eliminated for many animals leading to higher than average death rates.

Native wildlife have adapted to native plants. These introduced, pest plants may create a void in nesting habitat, by eliminating native shrubs, grasses, and trees that wildlife have used in the past. Some animals have specialized in feeding on or using certain plants.

How did we get in this mess? Some invasive, pest plants were introduced intentionally, before we realized what would happen. Kudzu, also known as the Plant that Ate the South, was brought from China and introduced for erosion control. Many European settlers brought plants from their homeland to ease homesickness. Many people admire the fragrant, creamy blossoms of honeysuckle, but this foreigner came from Japan and has displaced the native Coral Honeysuckle with its red blossom. Some of these plants, such as Autumn Olive, were planted as wildlife food sources, but are now having a negative impact on wildlife food sources.


Kudzu

Seeds of some plants were accidental travelers brought over in dirt used as packing or ballast in ships. When the dirt was dumped, seeds were also released**.** It is believed that fire ants were also introduced this way as well as some soil pathogens that have wrecked havoc on native plants.

How do these exotic, invasive plants move from your yard to America's wildlands? They travel many different routes. Mowing equipment can accidentally spread plant material along roadsides. Birds and other wildlife eat seeds that spread from their droppings. Some seeds of these pest plants are wind-blown. Domestic animals can spread the seed too. Many wilderness areas now require that pack horses are fed "certified weed-free" hay and grain.

Control of these exotic pest plants usually requires the use of herbicides and a long-term commitment and outright determination. The invasive plant may continue to reappear. Seeds of *Serecia lespedeza* or Scotchbroom will persist in the soil for 20 years or more. These plants may be brought back in by wildlife or equipment moving from one location to another.

One of the greatest challenges facing public land managers are property lines. The invasive plants must be treated on both sides of the property line for control measures to be effective. Sometimes multiple land landowners must get involved. Currently, scientists are researching biological controls, such as insects, but they are reluctant to introduce more exotic species for fear of creating a worse situation.

Who's responsible? Ultimately, we all are. Few laws exist to control movement of these exotic pest plants and many are imported or grown and sold in the United States.

Unknowingly, you may plant an invasive, exotic plant in your yard. However, by making informed choices, you can make a difference in the future of America's parks, forests, and wildlands.

Where you can go for more information. There are various organizations that can help you learn which native plants to use and which non-native, invasive plants are being sold. Native plant societies in North and South Carolina can provide information on native plants to use in your yard. These organizations sponsor workshops, meetings, and plant rescues. See www.scnps.org or www.ncwildflower.org to learn more about native plant groups in your area.

The Southeast Exotic Pest Plant Council website has important information. Go to www.se-eppc.org to learn more about invasive plants in your area. There are links for the North Carolina and South Carolina chapters. Other websites with information on a variety of exotic, invasive plants and animals are www.invasive.org, www.fs.fed.us/invasivespecies, and www.invasivespecies.org.

For public and private land managers, the problems of invasive plants may seem insurmountable. The SC Division of the Society of American Foresters have teamed up with various partners, such as SC Department of Natural Resources, SC Forestry Commission, SC Soil & Water Conservation Society, Quail Unlimited, and the National Wild Turkey Federation to provide a workshop for land managers. This workshop is scheduled for June 7-9, 2006. The field trip in Union, SC on June 7 will focus on how to incorporate native warm season grasses for erosion control, wildlife habitat, and forage. The lectures on June 8 and 9 at the Baxter Hood Center in Rock Hill, SC will focus on the unique problems that land managers face with invasive species. Contact Mary Morrison at 864-427-9858 for more information.

Native Legumes, Wildflowers, and Bunch-Grasses Available for First Time Ever from Alabama Seed Sources

This year, for the first time ever, several species of herbaceous plants native to the longleaf forest ecosystem will be commercially available. Most of these herbs are native legumes and warm season grasses. For instance, butterfly pea (*Centrosema virginianum*), several native lespedezas (*Lespedeza capitata, L. hirta*, & *L. virginica*) and other native species are available. These herbaceous species are well documented as good quality quail foods and they are perennials. Some of these species may live for decades after establishment.

Several nurseries on the *Longleaf Nursery List* will be growing and selling native herbs from the same containers that longleaf seedlings are produced in. These plugs may be easily planted by hand or machine and should sell for roughly the same price as container-grown longleaf pine seedlings.

Unlike many commercially available food plot species (thunberg, bicolor, and sericea lespedezas), our native legumes are not invasive weeds. For decades, most perennials herbs and shrubs recommended for food plot establishment came from Asia. Unfortunately, these plants often prove highly mobile and aggressive, displacing the native herbaceous layer as they spread through the forest. Today, and in the near future, some of our greatest management challenges will be controlling invasive weeds that we purposely planted in misguided attempts at improving wildlife habitat. When I talk to landowners about these Asian species I tell them, "Today it will cost you $1.00 to plant it. Tomorrow, it will cost you $10.00 to control it."

Whenever possible, consider using native species as your first alternative. Autumn olive and bicolor lespedeza are not better for quail because they were brought all the way from Asia; or because your local nursery recommends them. Quail were present in large numbers when most of the Southeast was covered with native herbaceous species and there were many small farms scattered through the rural landscape. Planting invasive weeds is not improving our situation!

In addition to native legumes, several nurseries will have warm season bunch grasses like Indian Grass

Upcoming Events

April 18	Longleaf Pine Establishment Workshop and Landowner Tour. Pee Dee Research & Education Center, Florence, SC. For more information go to www.clemson.edu/extfor/Continuing_Edu or call (864) 656-0606.

Available for 2005-06 Growing Season

	Switch Grass *Panicum virgatum*	Indian Grass *Sorghastrum nutans*	Plume Grass *Saccharum alopecuroides*	Butterfly Pea *Centrosema virginianum*	Hairy Lespedeza *Lespedeza hirta*	*Lespedeza capitata*	Mixed Native *Lespedeza spp.*	Blazing Star *Liatris tenuifolia*	Purple-Feather-flower *Liatris graminifolia*	Thin Pod Wild Indigo *Baptisia albescens*	Rabbit Bells *Crotalaria rotundifolia*	*Crotalaria purshii*	Golden Aster *Pityopsis graminofolia*	Rayless Sunflower *Helianthus radula*	Scurfpea *Tephrosia spicata*
Simmons Tree Farm (912) 375-7520	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes				
PH Longleaf Seedling Co. (251) 990-6488	Yes	Yes		Yes			Yes	Yes							
International Forest Co. (800) 633-4506	Yes	Yes							Yes				Yes	Yes	
Meeks Tree Farms (877) 809-1737	Yes	Yes				Yes		Yes							Yes
Clary & Sons (912) 427-3541				Yes	Yes	Yes		Yes		Yes					
International Paper (877) 833-4760	Yes	Yes	Yes	Yes	Yes		Yes								
Kathy Holston (478) 954-3024	Yes	Yes	Yes				Yes	Yes		Yes					
Deep South Growers (912) 384-6252	Yes	Yes	Yes	Yes	Yes		Yes				Yes	Yes			
Honey-Hole Nursery (478) 463-3770	Yes	Yes		Yes	Yes					Yes	Yes				
Lewis Hay Tree Farm (843) 559-0860	Yes	Yes	Yes	Yes	Yes		Yes							Yes	
Blanton & Sons Container Pine (850) 973-2967	Yes	Yes	Yes	Yes	Yes		Yes								

Extension Forestry & Natural Resources
Clemson University
272 Lehotsky Hall
Clemson, SC 29634-0317

(*Sorghastrum nutans*) and switchgrass (*Panicum virgatum*). These are tall, attractive, bunch grasses that are native to the longleaf pine understory community. They also look great in flower gardens! The Missouri Botanical Garden has fliers describing the attributes of Indian Grass and switchgass in native plant gardens.

Some native species make very attractive wildflowers. Several nurseries on the *Longleaf Nursery List* have been provided with *Baptia albescens* (white flowers), *Baptisia lanceolata* (yellow flowers), and native blazing stars (purple flowers.) The previously mentioned butterfly pea (*Centrosema virginianum*) is a climbing vine with very attractive blue flowers.

For a full listing of nurseries and the species they are growing, please contact The Longleaf Alliance (attn: Mark) at the Solon Dixon Center. Or, you can call the nurseries directly. Some of the nurseries producing native species this year are: Simmons Tree Farm, Meeks Tree Farm, Blanton & Sons, Clary & Sons, Honey Hole Nursery, International Paper, International Forest Company, PH Longleaf Seedling Co., Deep South Growers, Pine Tree Nursery and Oak Grove Farm.

Questions about this newsletter, submissions and requests for subscriptions should be directed to: Editor, *Forest Steward* Newsletter, Clemson University Cooperative Extension Service, Department of Forest Resources, 272 Lehotsky Hall, Box 340317, Clemson, SC 29634-0317. Phone: 864/656-2479.

The Forest Steward

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CLEMSON EXTENSION

The South Carolina Forest Steward Newsletter is sponsored by the Forest Stewardship Program in South Carolina. For more information on the Forest Stewardship Program, contact Ron Ferguson at the South Carolina Forestry Commission, 803/896-8846. *The South Carolina Forest Steward* is compiled and edited by Larry Nelson, Extension Forester at Clemson University, and Bob Franklin, Area Forestry & Wildlife Agent, Walterboro, South Carolina.

SOUTH CAROLINA FORESTRY COMMISSION